

What is claimed is:

1. An all-terrain vehicle comprising:
a frame;
a plurality of wheels rotatably mounted to the frame;
an engine assembly mounted to the frame, the engine assembly including a fuel system;
a carburetor operatively connected to the fuel system, the carburetor having a housing with an exterior surface, a fuel inlet, an air intake, and a mixing chamber; and
a carburetor heater adapted for use with the carburetor, the carburetor heater comprising a main body with a heating element and a fastener adapted to secure the carburetor heater to the exterior surface of the carburetor, the main body having at least a first shaped surface that complements and mates with a portion of the exterior surface of the carburetor.
2. The all-terrain vehicle of claim 1, wherein the main body has a second shaped surface that complements and mates with another portion of the exterior surface of the carburetor.
3. The all-terrain vehicle of claim 2, wherein the first shaped surface and the second shaped surface are curved.
4. The all-terrain vehicle of claim 3, wherein the first shaped surface and the second shaped surface are concave.
5. The all terrain vehicle of claim 4, wherein the first shaped surface and the second shaped surface abut at an angle to each other.
6. The all-terrain vehicle of claim 2, wherein the second shaped surface is formed as a groove in the main body.
7. The all-terrain vehicle of claim 1, wherein the main body has a first lobe and a second lobe and the first curved surface is formed between the first lobe and the second lobe.
8. The all-terrain vehicle of claim 7, wherein the first curved surface extends partially onto the first and second lobes.
9. The all-terrain vehicle of claim 7, wherein the main body has a second shaped surface, disposed at an angle to the first shaped surface, and formed between third and fourth lobes on the main body.
10. The all-terrain vehicle of claim 7, wherein the fastener extends from one of the first and second lobes.

11. The all-terrain vehicle of claim 10, wherein the first lobe extends from the main body at a greater distance than the second lobe, and the fastener is mounted to the first lobe.

12. The all-terrain vehicle of claim 1, further comprising a thermal conductor disposed between the carburetor heater and the exterior surface of the carburetor.

13. The all-terrain vehicle of claim 1, wherein the engine assembly further comprises a cooling system including a pathway and an engine cooling fluid carried in the pathway, wherein the carburetor heater forms a portion of the pathway of the cooling system, and the heating element includes the engine cooling fluid.

14. The all-terrain vehicle of claim 13, wherein the main body of the carburetor heater has a passage through which the engine cooling fluid passes.

15. The all-terrain vehicle of claim 13, wherein the engine assembly includes a cylinder block and the pathway is positioned so that the engine cooling fluid absorbs heat from the cylinder block and transfers the heat to the carburetor heater positioned downstream of the cylinder block.

16. The all-terrain vehicle of claim 13, further comprising a thermostat disposed in the pathway.

17. The all-terrain vehicle of claim 16, wherein the carburetor heater is downstream of the thermostat.

18. The all-terrain vehicle of claim 16, wherein the carburetor heater is upstream of the thermostat.

19. The all-terrain vehicle of claim 18, wherein the portion of the pathway formed by the carburetor heater bypasses the portion of the pathway formed by the thermostat.

20. The all-terrain vehicle of claim 1, further comprising an electrical system operatively connected to an electrical heating element disposed within the carburetor heater.

21. The all-terrain vehicle of claim 20, wherein the electrical heating element is a resistive heating element.

22. The all-terrain vehicle of claim 20, wherein the electrical heating element is a positive temperature coefficient thermistor.

23. The all-terrain vehicle of claim 1, wherein the fastener is an adjustable clamp.

24. The all-terrain vehicle of claim 23, wherein the adjustable clamp has a shaped surface that complements the first shaped surface of the carburetor heater so that a portion of the carburetor may be clamped therebetween.

25. The all-terrain vehicle of claim 1, wherein the first shaped surface abuts the exterior surface of the housing adjacent to the mixing chamber.

26. The all-terrain vehicle of claim 25, wherein the main body of the carburetor heater includes a second shaped surface that abuts the exterior surface of the housing adjacent to the air intake.

27. A carburetor heater for use with a carburetor, the carburetor heater comprising:

a main body;

a heating element disposed within the main body;

a shaped mounting surface formed in the main body; and

a fastener mounted to the main body and adapted to attach the main body to the carburetor so that the mounting surface mates with a surface of the carburetor.

28. The carburetor heater of claim 27, wherein the shaped mounting surface is an arcuate, concave surface.

29. The carburetor heater of claim 27, wherein the shaped mounting surface is formed by portions of the main body and a first lobe and a second lobe extending from the main body.

30. The carburetor heater of claim 29, wherein the fastener is mounted to the first lobe.

31. The carburetor heater of claim 27, further comprising a second shaped surface formed in the main body that is disposed at an angle to the shaped mounting surface.

32. The carburetor heater of claim 31, wherein the second shaped surface is a concave groove formed in the main body.

33. The carburetor heater of claim 27, wherein the shaped mounting surface has a first shaped surface formed by first curved surfaces of portions of the main body and first and second lobes extending from the main body, and wherein the main body has a second shaped surface formed by second curved surfaces of portions of the main body and third and fourth lobes extending from the main body, and the second shaped surface is disposed at an angle to the first shaped surface.

34. The carburetor heater of claim 27, wherein the main body is formed of heat conductive material.

35. The carburetor heater of claim 27, further comprising a thermal conductor disposed on the shaped mounting surface for enhancing thermal conduction between the carburetor heater and the carburetor.

36. The carburetor heater of claim 27, wherein the heating element includes a fluid passage passing through the main body.

37. The carburetor heater of claim 27, wherein the heating element includes an electrical heating element connected to the main body.

38. The carburetor heater of claim 37, wherein the electrical heating element is a resistive heating element.

39. The carburetor heater of claim 37, wherein the electrical heating element is a positive temperature coefficient thermistor.

40. The carburetor heater of claim 27, wherein the fastener is an adjustable clamp.

41. An internal combustion engine assembly comprising:

- a fuel system;

- a carburetor formed by a housing with a mixing chamber and an exterior surface, a fuel inlet and an air intake, and a carburetor heater for use with the carburetor, wherein the carburetor heater comprises

- a main body,

- a heating element disposed within the main body, and

- a fastener mounted to the main body and adapted to secure the carburetor heater to the exterior surface of the carburetor, wherein the main body has at least a first shaped surface that complements and mates with a portion of the exterior surface of the carburetor.